10th Class 2013

Biology	Group-II	Paper-II
Time: 2.45 Hours	(Subjective Type)	Max. Marks: 63

Part-I

2. Write short answers to any Six (6) questions: 12

(i) What is the effect of smoking on teeth?

Ans Due to smoking, the teeth become weak and stained. Moreover, the loss of teeth is 2 to 3 times higher in smoker than in non-smokers.

(ii) Draw a labelled diagram of lungs and pleural membrane.

Ans

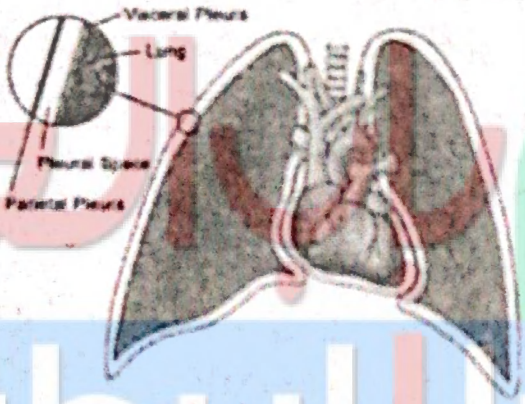

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Fig. Lungs and pleural membranes.

(iii) What is trachea?

Ans The trachea is a 12-cm long tube. It lies in front of the esophagus. It is also called as windpipe. There are C-shaped cartilaginous rings in the wall of trachea. The cartilages keep the trachea from collapsing even when there is no air in it.

(iv) What are bronchioles?

Ans Within the lungs, the bronchi divide into fine tubules called as bronchioles.

(v) Define dialysis.

Ans The clearing of blood (removing nitrogenous wastes and extra water) by artificial ways is called as dialysis.

(vi) Define excretion.

Ans The removal of waste material from the organism's body is called as excretion.

(vii) What is kidney failure?

Ans A complete or near complete failure of kidneys to excrete waste materials and to regulate water and salts in the body is called as kidney failure.

(viii) What is pressure filtration?

Ans It is a process in which most of the water, salts, glucose and urea of the blood is forced out of the glomerulus and passed into the Bowman's capsule. This is the first step in urine formation.

(ix) Write the function of bone.

Ans The main functions of the bone are to support and protect different parts of the body. These also form red blood cells and white blood cells.

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3. Write short answers to any Five (5) questions: 10

(i) Differentiate between stomata and lenticels.

Ans Stomata are the small pores within the epidermis of the leaves. These are surrounded by bean-shaped guard cells and open only in the presence of light. On the other hand, the lenticels are the small pores in the stems of the plants. These are not surrounded by guard cells. There is no effect of light on them.

(ii) What are the main types of waste materials in plants?

Ans The waste materials that are removed by some plants are resins (by coniferous trees), gums (by keekar), latex (by rubber plant) and mucilage (by ladyfinger and carnivorous plants).

(iii) What are vocal cords? Give their function.

Ans Vocal cords are two pairs of fibrous bands which are stretched across the larynx. When the air passes over them, they vibrate. Hence, sound is produced.

(iv) What is mucus?

Ans The trachea and bronchi are lined with glandular cells which secrete mucus. The mucus moistens the air and traps any particle of dust or bacteria that have escaped from nasal cavity. The cilia beat with an upward motion so that the foreign particles along with mucus are sent to oral cavity from where it may be either swallowed or coughed out.

(v) How does vegetative propagation occur in Bryophyllum?

Ans The vegetative propagation in Bryophyllum (pather chut) occurs by leaves. This plant has fleshy leaves and adventitious buds at the margins of the leaves. When the leaf falls on the ground, the buds grow into new plants.

(vi) Name the systems of coordination.

Ans Nervous system and endocrine system.

(vii) Write the names of four types of asexual reproduction in animals.

Ans The four types of asexual reproduction in animals are: budding, multiple fission, binary fission and fragmentation.

(viii) Name the nitrogenous bases found in DNA molecules.

Ans The nitrogenous bases found in DNA molecule are: Adenine, guanine, cytosine and thymine.

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4. Write short answers to any Five (5) questions: 10

(i) Define stimulus.

Ans Any change in the external or internal environment of organism is called as stimulus.

(ii) Write full name of HIV virus.

Ans The full name of HIV virus is human immuno deficiency virus.

(iii) **Differentiate between interspecific and intraspecific interactions.**

Ans The interaction among the members of different species is called as interspecific interaction. While the interaction among the members of the same species is called as intraspecific interaction.

(iv) **Name the two sources of variations.**

Ans Crossing over and mutations are the important sources of variations.

(v) **Name the important types of pollution.**

Ans The important types of pollution are; air pollution, water pollution and land pollution.

(vi) **Give the important symptoms of dengue fever.**

Ans The important symptoms of dengue fever include high fever, severe headache, pain behind the eyes, muscle and joint pain and rash.

(vii) **What is heroin? How does it affect the human's body?**

Ans Heroin is a semi-synthetic drug from morphine. It affects on central nervous system and causes drowsiness.

(viii) **Define pollutant.**

Ans The substance which causes pollution is called as pollutant.

Part-II

NOTE: Attempt any Three (3) questions.

5.(a) Give the location and functions of forebrain and midbrain. **4**

Ans **1. Forebrain:**

It is the largest part of the brain. The important parts of forebrain are as follows:

(i) **Thalamus:**

It lies just below the cerebrum. It serves as a relay center between the various parts of the brain and the spinal cord. The thalamus is involved in pain perception and consciousness (sleep and awakening).

(ii) **Hypothalamus:**

It lies above the midbrain and just below the thalamus. Its size is roughly the size of an almond. Hypothalamus links the nervous system and endocrine system. It also controls the feelings such as pain, sorrow, pleasure, rage, etc.

(ii) **Cerebrum:**

It is the largest part of the forebrain. It controls the movement of skeletal muscles, thinking, intelligence and emotions.

2. **Midbrain:**

It lies between the forebrain and hindbrain and connects both of them. It receives sensory information and sends it to the suitable part of the forebrain. It also controls some auditory reflexes and posture.

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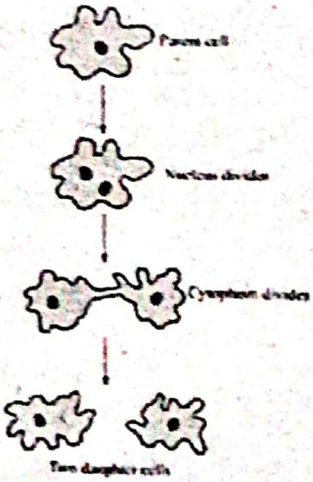
(b) How does amoeba reproduce asexually?

Ans Asexual reproduction in amoeba occurs by binary fission as well as multiple fission. In binary fission, firstly the nucleus divides into two nuclei. Then the cytoplasm is divided. Thus, one parent cell divides into two daughter cells. These daughter cells grow to the size of the parent cell.



In multiple fission, the nucleus of the parent cell divides into several nuclei by repeated divisions. Then the cytoplasm divides into several parts. Then each new part of the cytoplasm encloses one nucleus. So many daughter cells are produced from one parent cell.

6.(a) Define biotechnology and describe its importance. 4

Ans The use of living organisms in processes for the manufacturing of useful products is called as biotechnology.

Importance of biotechnology:

(i) In the field of medicines, insulin and interferon are synthesized from bacteria. Moreover, a large number of vaccines, antibodies, human growth hormones and other medicines have been produced by biotechnological techniques.

(ii) Biotechnology has also played an important role in food and agriculture. The fermented foods like pickle, yogurt, and powdered milk, a mixture of barley, various vitamins and dairy products are produced by using microorganisms. Moreover, wine and beer are produced in beverage industry. Biotechnology has also played role in agriculture. By this technology, transgenic (an organism having a foreign gene) plants have been produced. These plants give more yield and resistant to diseases.

(iii) Biotechnology is also being used for dealing the environmental issues like pollution control, development of renewable sources of energy and conservation of biodiversity. Bacterial enzymes are used to treat sewage water to purify.

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(b) Describe the role of decomposers in the ecosystem. **3**

Ans The decomposers (bacteria and fungi) play an important role in the ecosystem. They decompose the dead organic matter of plants and animals into simpler compounds. These secrete digestive enzymes into the dead organic matter. After digestion, these absorb the products of their own use. In this way, these play role in controlling pollution as well as releasing minerals which are then used by the producers.

7.(a) What basic steps a genetic engineer adopts during the manipulation of gene? **4**

Ans **(i) Isolation of the gene of interest:**

Firstly, the genetic engineer identifies the gene of interest in donor organism. Special enzymes called as restriction endonucleases are used to cut the identified gene from the DNA of donor organism.

(ii) Insertion of gene into a vector:

A vector is selected for the transfer of the isolated gene of interest to the host cell. The vector may be a plasmid (the extra chromosomal DNA present in many bacteria) or a bacteriophage. The gene of interest is attached with the vector DNA by using endonuclease (breaking enzyme) and ligase (joining enzyme). The vector DNA and the attached gene of interest are collectively called as recombinant DNA.

(iii) Then the recombinant DNA is transferred to a target host cell. In this way, the host organism is changed into a genetically modified organism (GMO).

(iv) Then a suitable culture medium is provided to the GMO for growth.

(v) The GMO contains the gene of interest and manufactures the desired product which is then isolated from the culture medium.

(b) Write note on resistance against antibiotics. 4

Ans Antibiotics are extremely important in medicine, but unfortunately, bacteria are capable of developing resistance to them. Such bacteria are not affected by commonly used antibiotics.

Bacteria have number of ways of developing resistance. Sometimes, their internal mechanism stops the working of antibiotic. Bacteria can also transfer the genes responsible for antibiotic resistance between them. So such resistant bacteria make it possible for other bacteria to acquire resistance. Another reason for increasing antibiotic resistance in bacteria is their use in diseases in which they have no efficacy (*e.g.*, antibiotics are not effective against infections caused by viruses.)

Resistance to antibiotics poses a serious and growing problem, because some infectious diseases are becoming more difficult to treat. Some of the resistant bacteria can be treated with more powerful antibiotics, but there are some infections that do not eliminate even with new antibiotics.

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8.(a) Explain the flow of materials in an ecosystem. 4

Ans The flow of materials from one trophic level to the other takes place through food chains and food webs. A food chain is a series of organisms in which one organism eats the other organism and provides food for the organism coming later on. For example, in the following food chain:

Grass → Grasshopper → Sparrow → Eagle

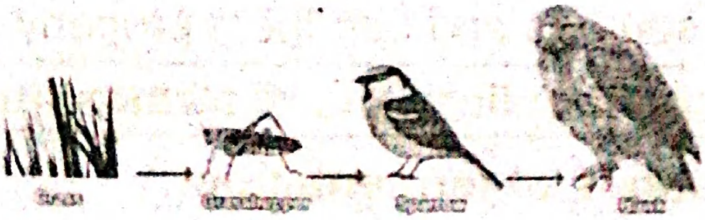

Fig. A simple food chain.

Grasshopper is a primary consumer. Usually, the herbivores are the primary consumers. The primary consumers are then eaten by secondary consumers and so on. It has been observed that a short food chain provides more energy as compared to long food chain.

In nature, the food chains are very complicated. Because a single organism is a source of food for several other organisms. Thus several food chains are interconnected and form a web called as food web.

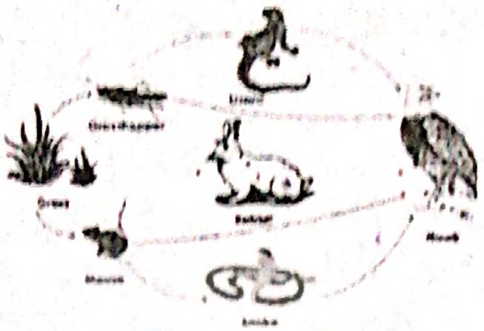

Fig. A food web in grassland ecosystem.

(b) Differentiate between renewable and non-renewable resources. **3**

Ans The renewable are those resources which we can get again and again if managed properly. These include air, water, forest, wild life, etc. For example, if we cut the trees of forests, these will exhaust with passage of time. If we replant the trees, there will be a balance. So the resources will not exhaust. On the other hand, the resources, which we cannot get again and again are called as non-renewable resources. These include fossil fuels etc. The fossil fuels include coal, petroleum, etc. Once these resources are exhausted, millions of years are required for their reformation. So we should conserve these resources and use them properly.

9.(a) Write three applications of fermentation. **3**

Ans **Applications of fermentation:**

The important applications of fermentation are as follows:

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(i) The food becomes delicious and safe by fermentation. There are several cereal products obtained by fermentation process *e.g.*, bread.

(ii) In dairy products, the most common are curd and cheese. These are prepared by fermentation. For cheese formation, the protein of milk coagulates. In this process, the acid produced by lactic acid bacteria reacts chemically with milk proteins. Similarly, other types of lactic acid bacteria are used for the formation of curd.

(iii) For the preservation of fruits, vegetables, salt and acid are mixed with them. In this way, their fermentation takes place.

(b) Explain drug addiction and the problems associated with it. **4**

Ans There is a close relationship between drug addiction and crimes. A person having narcotics is also guilty. Most of the drug addicts are involved in different types of crimes like theft, robbery, etc. These addicts have become mental patients. The society hates them. Therefore, they face social stigma. These people are very weak in social behaviours *i.e.*, the society dislikes them due to their unpredictable behaviours.

Part-III

(Practical Part)

NOTE: Attempt any Two (2) questions.

(A-i) You have investigated the conditions for seed germination. When does a seed complete its germination? **2**

Ans A seed completes its germination when a seedling is formed from it.

(A-ii) You have demonstrated the presence of tar in cigarette smoke. Draw a labelled diagram of this experiment. 3

Ans

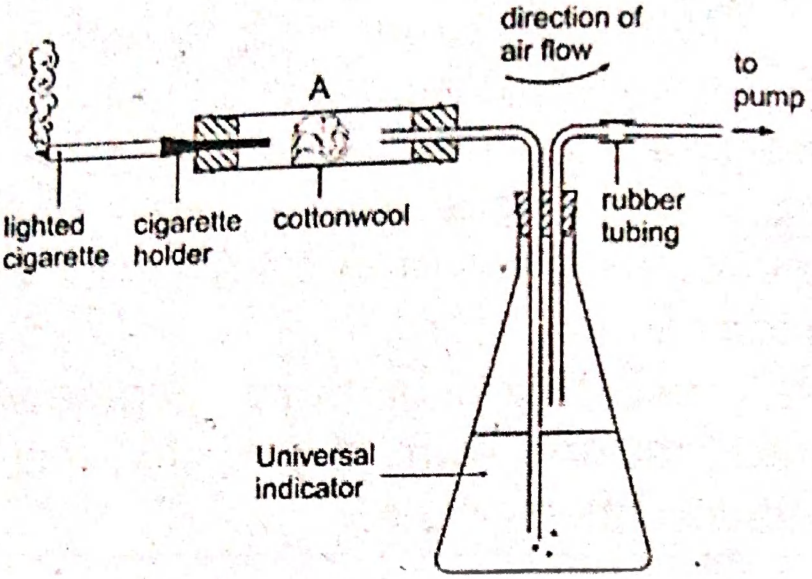
direction of air flow
to pump
A
lighted cigarette
cigarette holder
cottonwool
rubber tubing
Universal indicator

Fig. Experimental set up to detect tar in cigarette smoke.

(B-i) You have examined the structure of sheep kidney. Which side of the kidney is towards the vertebral column? Concave or convex? 2

Ans The concave side of the kidney is towards the vertebral column.

(B-ii) You have observed the response in chemical coordination by asking a student to say a few words in front of the class and observed the change in heartbeat. Record your observations in the form of a table. 3

Ans Observation:

Speed of heartbeat	
Before speech	After speech

(C-i) You have observed the contraction of shin muscle in frog. Observe the changes of the contraction of shin muscle. 3

Ans When an electrical stimulus is given to a shin muscle, it gives an impulse to the muscle. If the electrical stimulus is strong enough, then the muscle contracts. It is called as "muscle twitch". In addition, oxidation and reduction reactions also occur during muscle contraction.

(C-ii) You have studied the bull eye. Write the material required for this experiment. **2**

Ans Bull eye, dissecting box, gloves, paper towel, dissecting board, a paper of newspaper.

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